
USING GAMES IN EDUCATION



COMPUTER AND VIDEO GAMES

- Video games are such a popular and influential medium for a combination of many factors.
- Primarily, however, video games elicit powerful emotional reactions in their players, such as fear, power, aggression, wonder, or joy.
- Video game designers create these emotions by a balancing a number of game components, such as character traits, game rewards, obstacles, game narrative, competition with other humans, and opportunities for collaboration with other players.
- Understanding the dynamics behind these design considerations might be useful for instructional technologists who design interactive digital learning environments.

GAMES IN EDUCATION

- Computer and video games are a maturing medium and industry and have caught the attention of scholars across a variety of disciplines.
- Traditionally, computer and video games have been ignored by educators.
- When educators have discussed games, they have focused on the social consequences of game play, ignoring important educational potentials of gaming.
- However, contemporary developments in gaming, particularly interactive stories, digital authoring tools, and collaborative worlds, suggest powerful new opportunities for educational media.

GAMES IN EDUCATION

- Further, video game playing occurs in rich socio-cultural contexts, bringing friends and family together, serving as an outlet for adolescents, and providing the “raw material” for youth culture.
- Finally, video game research reveals many patterns in how humans interact with technology that become increasingly important to instructional technologists as they become designers of digital environments.
- Through studying video games, instructional technologists can better understand the impact of technology on individuals and communities, how to support digital environments by situating them in rich social contexts.

ADVANTAGES OF MEANINGFUL LEARNING

- Facilitates the acquisition of new knowledge.
- Relates new information with existing information, thus creating a positive learning environment.
- Provides active learning, which depends on a student's degree of assimilation.

CLASSIC VIDEO GAME VS. TRADITIONAL LEARNING

VIDEO/COMPUTER GAME	TRADITIONAL LEARNING
Player controls how much and when he/she plays.	Groups of students learn at one pace, and are given very little freedom to manage the content and pacing of their learning.
Students are actively engaged in quick and varied activity.	Students passively absorb information in routine activities, such as lecture.
Players play and practice until they master the game; taking as much time as they need. (Achievement constant)	Students must all go at the same pace, regardless of achievement. (Time constant)

CLASSIC VIDEO GAME VS. TRADITIONAL LEARNING (CONT.)

VIDEO/COMPUTER GAME	TRADITIONAL LEARNING
Players have feeling of mastering the environment, becoming more powerful, knowledgeable and skillful in the environment.	Students memorize knowledge from teachers for pencil and paper tests, rarely applying it in any dynamic context.
Players work together, sharing tips and trading secrets.	Students perform in isolation, and cannot use one another as resources.

CLASSIC VIDEO GAME VS. TRADITIONAL LEARNING (CONT.)

VIDEO/COMPUTER GAME	TRADITIONAL LEARNING
Each player competes against his/her ability to master the game, to reach new goals. Every player can reach a state of “mastery” over the game.	Students are graded numerically, and encouraged to compete against one another.
Games are played for the intrinsic reward of playing them, for the emotional state they produce.	Schools are structured around extrinsic rewards, such as good grades or a fear of failure (flunking).

EVALUATING EDUCATIONAL GAMES

- To choose an educational game, teachers must take into consideration the following:
 - Know students' previous knowledge related to the topic under discussion.
 - Play the game to ensure that:
 - The material in the game is presented in a logical sequence.
 - The game is engaging to students.
 - The user interface is easy to use.
 - The documentation and/or online tutorial are understandable for students of the appropriate level.

FREE EDUCATIONAL GAMES

■ Chemistry

- *EleMental* (<http://www.hagames.org/elemental.aspx>)
 - A tetris-style middle-school game for learning about the chemical elements (**Play Online**).
 - The game was the runner up in the first Liemandt Foundation Hidden Agenda contest.
- *MeCHeM* (<http://www.hagames.org/mechem.aspx>)
 - A game for middle schoolers learning chemistry and the properties of elements (**Play Online**).
 - Players select elements and strategies to equip their mechs with armor, batteries, capacitors and weapons, and then battle the Mechs to see which is the stronger.
 - Winner of the Liemandt Foundation's first "Hidden Agenda" content in 2004.

FREE EDUCATIONAL GAMES



EleMental



MeCHEM

FREE EDUCATIONAL GAMES

■ Math

□ *AlgebrArcade* (<http://www.hagames.org/algebra.aspx>)

- Beat the game – learn equations!
The most fun you'll ever have with algebra (**Play Online**).



FREE EDUCATIONAL GAMES

■ Physics

□ *Racing Academy* (<http://lateralvisions.co.uk/downloads.htm>)

- Racing Academy is a racing game built on an advanced physics simulation engine intended to support an online community of learners' increased familiarity with engineering concepts (**Installation required**).

- For educational purposes, the game's physics are as true-to-life as possible (as opposed to being optimized for the fun of the game.).

□ *Waste of Space* (<http://www.hagames.org/wasteofspace.aspx>)

- A middle-school physics game about the laws of motion in a vacuum.
 - Winner of the Liemandt Foundation's second Hidden Agenda Conference (**Play Online**).
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FREE EDUCATIONAL GAMES



Racing Academy



Waste of Space

FREE EDUCATIONAL GAMES

■ Other Areas

- There are other games that teach relevant and interesting topics such as:
 - Carabella goes to College (www.privacyactivism.org/carabella/)
 - This game is about finding the right balance between privacy and convenience.
 - As you play through the game with Carabella, you will learn how everyday activities can erode your privacy.
 - Outbreak at Watersedge (<http://www.mclph.umn.edu/watersedge/>)
 - This game introduces you to the world of public health as you help discover the source of the outbreak that has hit the small community of Watersedge and stop it before more residents get sick.
 - *Virtual-U* (www.virtual-u.org)
 - Virtual U provides students, teachers, and parents the unique opportunity to step into the decision-making shoes of a university president.
 - Players are responsible for establishing and monitoring all the major components of an institution, including everything from faculty salaries to campus parking.

EDUCATIONAL GAMES RESOURCES

- Educational computer games can be either purchased or acquired as freeware.
 - These games can be acquired as freeware at the following sites:
 - *Social Impact Games: Entertaining Games with Non-Entertaining Goals*
 - <http://www.socialimpactgames.com/modules.php?op=modload&name=News&file=index&catid=2&topic=&allstories=1>
 - *Play Learning Mini-Games – Online Interactive Games*
 - <http://www.desq.co.uk/sections/play/index.asp?a=play&opt=2>
 - *Free Software Downloads and Software Reviews*
 - http://www.download.com/3120-20_4-0.html?tg=dl-20&qt=educational%20games&tag=srch
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EDUCATIONAL GAMES RESOURCES (CONT.)

- ❑ *Freefiles.com*

- [http://freefiles.com/educational-games.html?afdt=GEFYF0V2rasKEwic2of - eCKAhUXjIAKHTo6AM0YAyAAMlrwoAM4DQ](http://freefiles.com/educational-games.html?afdt=GEFYF0V2rasKEwic2of-eCKAhUXjIAKHTo6AM0YAyAAMlrwoAM4DQ)

- ❑ *Freeware Home: Free Software Downloads*

- <http://freewarehome.com/>

- ❑ *Free Educational Software Downloads Freeware Files.com*

- http://www.freewarefiles.com/cat_1_13_Educational-Games.html

GROUP DYNAMIC

- **Kinetic City Lab Car (<http://www.kineticcity.com/labcar/>)**
 - ❑ Each participant will go to the above address and explore four games that the instructor will show (20 minutes).
 - ❑ Each participant will give his or her opinion about each game (strengths and weaknesses). (10 minutes)
 - ❑ The entire group will be divided into two sub groups: A and B.
 - ❑ Each sub group will discuss the individual opinions, advantages and disadvantages of computer educational games in general to obtain consensus per game. (10 minutes)
 - ❑ Each group member will talk about a single game, but he or she will talk about the **group's** stand about that particular game. Each member can talk only once (10 minutes)
 - ❑ Sub group A will support the importance of all computer educational games and sub group B will remark the disadvantages and problems of these games (10 minutes).

ADVANTAGES AND DISADVANTAGES OF COMPUTER EDUCATIONAL GAMES

■ Advantages

- ❑ Provides a more engaging learning environment, since a game by nature can provide exciting roles to players.
- ❑ Facilitates learning by providing more visual (colors, textures, etc.) and audio (music, sound effects, etc.) stimulation.
- ❑ Helps meaningful learning by associating new knowledge with existing knowledge.
- ❑ Students learn by doing, instead by just listening.

■ Disadvantages

- ❑ Increase a student's dependency on technology in order to acquire knowledge or skills*.
- ❑ Searching for online games could lead students to computer viruses, spyware, etc. if their computer systems are not adequately protected.
- ❑ Spending too much time on a computer can cause eye-strain, carpal tunnel syndrome and other health problems.
- ❑ Computer educational games may not be found for many specific topics yet; or they might be in different languages.

VIRTUAL WORLDS

- Often mistaken for games, they are computer-based simulated environments intended for its users to inhabit and interact via avatars.
- These avatars are usually depicted as textual, two-dimensional, or three-dimensional graphical representations.
- The computer accesses a computer-simulated world and presents perceptual stimuli to the user, who in turn can manipulate elements of the modeled world.
- Such modeled worlds may appear similar to the real world or instead depict fantasy worlds.
- The model world may simulate rules based on the real world or some hybrid fantasy world. Example rules are gravity, topography, locomotion, real-time actions, and communication. Communication between users has ranged from text, graphical icons, visual gesture, sound, and rarely, forms using touch and balance senses.

VIRTUAL WORLDS

- The model world may simulate rules based on the real world or some hybrid fantasy world.
 - Example rules are:
 - gravity
topography
 - locomotion
 - real-time actions
 - communication
 - Communication between users has ranged from text, graphical icons, visual gesture, sound, and rarely, forms using touch and balance senses.
 - Some examples of virtual worlds include: Second Life, There, and Active Worlds.
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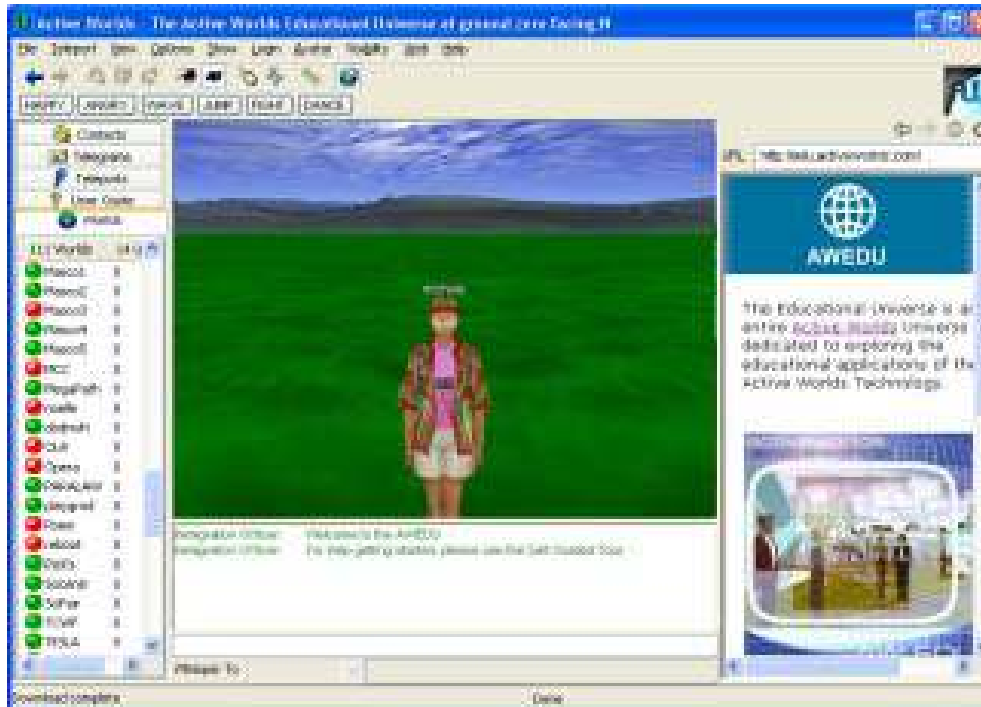
SECOND LIFE

- Here is a sample video explaining some features of Second Life.



ACTIVE WORLDS

- Here is a sample video of a user exploring Active Worlds



THERE

- Here are two sample videos:
 - The first video shows the user interface.
 - In contrast, the second shows of a special event in There.



WORKSHOP

- **NOTE:** Before you begin, remember to save all your work into your flash drive.
- 1. Find in the Internet two or three educational games that are related to your preferred topic.
- 2. Test these games and determine if they are suitable for your audience. Select at least one game (preferably two)
- 3. Create a 20 slide PowerPoint presentation that describes your topic, its importance, explain some of its main concepts, and discuss some educational games that associated with it to motivate students.
 - Make sure that you include two or three screenshots of each game that you will discuss.
- 4. Add special effects, transitions, and custom animation to your slides as necessary. Furthermore, use footers, except for the first slide.

WORKSHOP

5. Create a video demonstration of yourself playing the game using **Bulent's Screen Recorder**. Produce that video as **avi**, **wmv**, or **mpeg** format. The video can be with or without audio.
6. Incorporate this video into your **PowerPoint** presentation. Make sure that the video occupies the entire slide. Save your work and Minimize PowerPoint.
7. Create a script that you will use to narrate your entire PowerPoint presentation.
8. Using **Bulent's Screen Recorder** and your script, create a screen recording of your PowerPoint presentation. Before recording the screen, maximize PowerPoint.
9. When you are done, stop the recording with **F7** and produce it (either as AVI or WMV).
10. Present your work to the rest of the class.